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PHYSICIAN SPOTLIGHT:
SUNEETHA S. NUTHALAPATY

CAUSATION ANALYSIS
and the Authorized Treating Physician

CAUSATION and CASE LAW

CHRONIC BACK PAIN IMPAIRMENTS

Introducing the
NEXT STEP
Program

To Promote Medicolegal Scholarship for the Tennessee Workers' Compensation Community

AdMIRable Review

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In This Issue of AdMIRable Review

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SAVE THE DATE: 22nd Education Conference, June 12-14, 2019

The 22nd TN Workers' Compensation Education Conference is scheduled for Wednesday through Friday, June 12-14, 2019, at the Embassy Suites Nashville SE in Murfreesboro. For the conference agenda and registration information, including attendees, exhibitors, and sponsors, go to **https://tn.gov/workers-comp-conference** or contact the International Workers' Compensation Foundation at **IWCF@bellsouth.net**.

MIR PHYSICIAN SPOTLIGHT
SUNEETHA S. NUTHALAPATY, MD

Suneetha S. Nuthalapaty is a Board-Certified Physiatrist and the Medical Director of Regional Rehabilitation Center in Morrison, Tennessee, halfway between Manchester and McMinnville. She moved to Warren County from Pittsburgh to be the medical director of Inpatient Rehabilitation at HCA's River Park Hospital in 2005, which is now St. Thomas River Park. Her commitment to the area was supposed be short-term. Now, fourteen years later, she looks back at her life and wonders where the time has gone. "Time flies when you enjoy what you are doing," she reflects.

In her efforts to improve her knowledge about workers' compensation impairment ratings, she attended an AMA *Guides*, Sixth Edition training conference in Knoxville. There she learned about the MIR Registry and decided to apply for appointment. She finds MIR cases exciting and challenging. One of her MIR opinions was upheld in the Tennessee Supreme Court.

After completing her residency in Physical Medicine and Rehabilitation at the University of Pittsburgh in 2003, Dr. Nuthalapaty joined the faculty of University Pittsburgh Medical Center (UPMC). She relocated with her family to Middle Tennessee in 2005 and started her own practice, "Regional Rehabilitation Center," where she currently

SUNEETHA S. NUTHALAPATY, MD

serves as an outpatient provider. Since obtaining her board certification in Pain Medicine in 2009, she has worked tirelessly to educate patients and physicians about chronic pain management, the dangers of overdose and the opioid epidemic, the treatment of neonatal abstinence syndrome, and the effectiveness of methadone clinics.

"Dr. Sue," as she is called by patients and colleagues alike, started Regional Rehabilitation Center in order to provide high-quality interventional and non-interventional pain management in the field of musculoskeletal and spine rehabilitation. Her service region includes Warren, DeKalb, White, Coffee and Van Buren counties. Dr. Nuthalapaty is double-board-certified by ABPMR and ABPM. She focuses extensively on improving patients' activity levels and quality of life. She believes that each patient is unique and cannot be placed in a cookie-cutter treatment plan. At Regional Rehabilitation Center she concentrates on developing a distinctive treatment plan for each individual patient, including injections, medication management, physical therapy, and psychological counseling.

Dr. Nuthalapaty always dreamt of becoming a physician serving the less privileged. Growing up she was inspired by her father, who came from humble beginnings to become a prominent orthopedic surgeon in India. She observed him perform countless free surgeries at Christian mission hospitals for the poor. His inspiration led her to win the prestigious Governor's Award, given for the top three students in her state, and attend one of the best private medical schools in India, Christian Medical College, Vellore. She considers herself fortunate to be trained under some of the best physicians in the field of PM&R, such as Dr. Ross Zafonte and Dr. Michael Munin, while in residency. She has recently served as president of the Warren County Medical Society and currently serves as the appointed Vice President of TN PM&R Physician's Society. Additionally, she is involved in extensive clinical research.

Dr. Nuthalapaty has been married for twenty-two years to Sam, a business owner with a background in Electrical Engineering. She has two sons, David and Daniel, ages 18 and 15. Her hobbies include reading, cooking, gardening, interior decorating, and yoga. She sings in choir and leads bible studies in her local church. She loves to travel internationally. Some of the countries she has been to include Italy, Greece, Spain, and Morocco. She has organized a free healthcare clinic in her home town in India, which is managed by her sisters in her absence. She has been on a few mission trips, the most recent one to Guatemala in the summer of 2018.

"The reason I became a physician is to help people who are sick and the suffering. Hence, doing what I do every day means a lot to me. I am always trying to better myself physically, professionally and spiritually," says Dr. Nuthalapaty.

Dr. Nuthalapaty is excited to continue advancing her career in pain management and workers' compensation. She hopes to train the next generation of pain management physicians and other providers to continue to improve quality of care for patients to come.

NON-SPECIFIC CHRONIC BACK PAIN *AMA Guides,* Sixth Edition

Jay Blaisdell, MA, and James B. Talmage, MD


A perennial source of confusion for physicians, attorneys, and adjusters alike is the diagnosis "non-specific chronic, or chronic recurrent" back pain, which can be found in the cervical, thoracic, and lumbar spine regional grids in Chapter 17 of the *AMA Guides*, Sixth Edition. The reason for the confusion is threefold: 1) pursuant to Tennessee Code section 50-6-204 (k)(3), effective July 1, 2014, "the treating physician or chiropractor [. . .] shall not consider complaints of pain in calculating the degree of impairment, notwithstanding allowances for pain provided by the applicable edition of the *AMA Guides*," (2) non-specific pain is the only diagnosis in the *Guides* that gives greater weight to subjective complaints of pain than objective clinical evidence, and 3) the methodology for rating this diagnosis, as prescribed in the text on page 563, appears to contradict the methodology demonstrated in example 17-12, "Recurrent Low Back Pain without Objective Findings," on page 589.

While most MIR physicians have continued to use the diagnosis of non-specific, or chronic recurrent, back pain in their MIR Reports, as advised by the **Medical Director's Guidance on Pain Ratings,** this practice has not yet been addressed by a court. In the meantime, the Bureau's Medical Directors have suggested that this diagnosis might be appropriate, provided that the physician does not consider pain when selecting the grade modifier for functional history. As a result, except when Class 0 is chosen for this diagnosis, the default value of 2% will be selected whenever this diagnosis is applied to an injury on or after July 1, 2014, making the rating process significantly less complicated.

METHODOLOGY

The Diagnosis-Based Impairment (DBI) Method is an impairment-rating approach within the *AMA Guides,* Sixth Edition, whereby an impairment class, usually representing a range of impairment values within a cell of a grid, is selected through diagnosis and "specific criteria," otherwise known as key factors. The default impairment value within the impairment class may then be modified using non-key factors, also called grade modifiers, such as functional history (GMFH), physical examination (GMPE), and clinical studies (GMCS). This is done through the application of the net adjustment formula.

When rating "non-specific chronic, or chronic reoccurring, back pain," the MIR physician will use the DBI method. This diagnosis has two possible impairment classes, 0 and 1, with Class 1 having a range of impairment of 1% to 3%, with 2% serving as the default value, before any modifications are considered. The MIR selects this diagnosis in particular when all other diagnoses in the regional grid do not apply and yet the patient presents consistently, believably, over a period time, with back pain. All 3 spine tables have a footnote with this diagnosis.

The key concept here is that the MIR physician believes that the patient is experiencing pain, yet there are no related objective findings, most notably radiculopathy as distinguished from "Nonverifiable Radicular Complaints" on page 576 [i.e. no neurologic weakness, no loss of ability to distinguish "sharp" from "dull" stimuli, and no needle EMG evidence of denervation in an appropriate nerve root distribution].

> **"There is a category of patients who present with persistent pain and "nonverifiable" radicular complaints (defined in greater detail in Section 17.3, Adjustment Grid: Physical Examination, page 576) that are documented repeatedly after an identifiable injury. These patients have no objective findings and, therefore, are often given a diagnosis of "chronic sprain/strain" or "non-specific" back or neck pain. The current methodology allows these patients to be rated in impairment class 1, with a range of impairment ratings from 1 to 3% whole person impairment (WPI). The percentage impairment within that range depends on functional assessment, since there are no reliable physical examination findings or imaging findings in this group."**
>
> **(Rondinelli, 2009, p. 563)**

While the physician may be able to use the word "radiculopathy" in a *clinical* setting without performing a sensory test, for *impairment rating purposes*, a motor weakness and a sensory test must be performed, specifically one that tests whether the patient can distinguish between sharp and dull objects. If the person perceives every stimulus, sensation is not impaired by this test. If the person does not perceive any stimuli with eyes closed (anesthesia), or if the person cannot consistently answer correctly whether the stimulus was "sharp" or "dull," this is an abnormal test consistent with loss of the ability to tell sharp from dull stimuli. (For a detail treatment on evaluating radiculopathy pursuant to the AMA Guides, Sixth Edition, please see the **Fall 2013 Issue of *AdMIRable Review.***)

If the patient is found not to have radiculopathy, and the medical record shows that the patient has never had clinically verifiable radiculopathy, then the diagnosis line of "Intervertebral disk herniation and/or AOMSI[a]" cannot be used according to footnote "a" at the bottom of page 571:

"[a]Note: The following applies to the cervical, thoracic, and lumbar spine grids: 1) Intervertebral disk herniation excludes annular bulge, tear, and disk herniation on imaging without consistent objective findings of radiculopathy at the appropriate level(s) when most symptomatic."
(Rondinelli, 2009, p. 571).

The diagnosis of "Non-specific chronic, or chronic recurrent low back [or cervical or thoracic] pain (also known at chronic sprain/strain, symptomatic degenerative disc disease, facet joint pain, SI joint dysfunction, etc.)" may then be appropriate, provided no other diagnoses in the grid are applicable. The diagnosis of AOMSI can be used after certain surgeries (fusions) or with radiographic documentation of spinal instability by *Guides* criteria in Section 17.3c.

The reason for the footnote in all three spine tables is that asymptomatic people have a high prevalence of asymptomatic disc herniations on MRI. The rate in the lumbar spine varies from 30% in young adults to 40% by age 70 (Brinjikji, 2015). In

(Continued from page 726)

Carragee's study of 200 asymptomatic persons with an average age of 40, and without a significant low back pain history, 38% had either a disc protrusion or extrusion on MRI at the start of the longitudinal study. One hundred and seventy of the 200 people in the study had 625 traumatic events over the next five years (2006). There were a total of 354 episodes of serious back pain lasting at least a week (either related to, or unrelated to, the minor trauma episodes), yet only three people had a new disc protrusion/extrusion in the five years of the study. One of these new protrusions was related to lifting, but the woman had only right leg pain with a left sided protrusion with no nerve root contact, so the protrusion that had developed at some point in time was not logically related to her pain. One of these new protrusions was in a patient with only low back pain (no leg pain or leg neurologic deficit), and the pain first occurred during a normal, non-strenuous activity. The one large disc extrusion that occurred with nerve root contact and appropriate sciatica occurred spontaneously, with the individual stating there was no activity associated with the pain onset. Thus, Carragee makes the point that if a baseline MRI at the start of the study had not been available, clinicians could wrongly assume a post-injury MRI with a disc protrusion/extrusion was the cause of a person's symptoms, not realizing that the imaging change was logically present long before the pain began.

If the MIR Physician chooses this diagnosis line, only two impairment classes are available within the grid, Class 0 with 0% impairment, and Class 1 with a range of 1% to 3%. Selection of Class 0 means complaints of pain are either resolved or are occasional. Selection of Class 1 means that consistent and significant complaints of pain are found in medical records on multiple occasions. If Class 1 is chosen, the rating starts at default value of 2% and is subject to modification through the use of grade modifiers and the net adjustment formula.

INJURIES BEFORE JULY 1, 2014

According to the text in the lower left column of page 563, when using this diagnosis, "the percentage impairment within [its] range depends on functional assessment, since there are no reliable physical examination findings or imaging findings in this group" (Rondinelli, 2009). Consequently, if we are to heed the text on page 563, only the patient's GMFH may be considered as a modifying factor since the patient's GMCS and GMPE are not related to the current pain episode (i.e. not reliable), and are therefore excluded from the net adjustment formula calculation, as described on page 582. Under normal circumstances, when all 3 modifiers are found reliable, the net adjustment looks like this:

	(GMFH) - (Class)	=	(Adjustment)
+	(GMPE) - (Class)	=	(Adjustment)
+	(GMCS) - (Class)	=	(Adjustment)
		=	NET ADJUSTMENT

But since the GMCS and GMPE are viewed as unrelated/unreliable when using this diagnosis, and are therefore totally excluded from consideration, as are all unreliable modifiers, the Net Adjustment Formula looks like this:

(GMFH) - (Class) = (Net Adjustment)

Notice that the GMCS and GMPE are not given a value of 0, which would yield a very different mathematical result than if they are simply excluded. Also notice in Table 17-6 (page 575), "Functional History Adjustment: Spine," that a GMFH value of 0 means the patient is asymptomatic. If the patient is indeed asymptomatic at MMI, then impairment Class 0 should be chosen, not Class 1. Since a GMFH value of 0 will never be used for Class 1 impairments for this diagnosis, it is mathematically impossible to have a net adjustment of -1, and thus a final whole person impairment rating of 1%. If the MIR Physician assigns a final impairment rating of 1% using this diagnosis, then the methodology is incorrect.

The Bureau fully realizes that this is inconsistent with Example 17-2 (page 589), which assigned a value of 0 to the GMPE and GMCS, rather than excluding them entirely from the net adjustment formula; however, it should be noted that Example 17-2 appears to contradict methodology as explained on page 563, forcing the evaluator to choose between the two approaches. The Bureau's medical directors, consequently, suggest evaluators follow the approach provided on page 563. Note that Table 17-6, page 575, Functional History Adjustment: Spine also lists "inconsistent symptoms" as consistent with Grade Modifier 0. "Inconsistent" could be symptoms at MMI that sound to be identical to the symptoms documented in medical records from before the work incident occurred (i.e. inconsistent with causation by the incident).

INJURIES ON OR AFTER JULY 1, 2014

While Tennessee Code 50-6-204 (k)(3), effective July 1, 2014, states "the treating physician or chiropractor [. . .] shall not consider complaints of pain in calculating the *degree* of impairment, notwithstanding allowances for pain provided by the applicable edition of the AMA Guides," this appears to relate to grading the *degree or severity* of impairment, and appears not to be a statute excluding use of a diagnosis. Since most recent review articles about low back or neck pain use the term "non-specific back or neck pain" as a synonym for many diagnoses for which there is no consensus about how to scientifically prove a diagnosis (e.g. facet pain, sacroiliac joint pain, degenerative disc disease, discogenic pain, etc.), the Medical Directors feel the statute is not prohibiting recognizing the existence of the diagnosis that best correlates with 80%-90% of spinal pain presentations, but rather the statute is recognizing that pain complaints might be exaggerated at impairment rating evaluations, and the degree or severity of pain complaints should not be a factor in choosing an impairment percentage for any diagnosis.

Given that Table 17-6 considers mainly complaints of pain to assign the GMFH for spine injuries (and thus the degree of impairment as modified from the default), the Bureau's Medical Directors recommend that the GMFH be excluded from the net adjustment formula pursuant to Tennessee Code 50-6-204 (k)(3), for injuries on or after July 1, 2014. [Future decisions by a court may alter this advice.] Since the only other possible modifiers, GMCS and GMPE, are already excluded because they

Continued on page 810

CASES PROVIDE INSIGHT ON CAUSATION

Jane Salem, Esquire

Perhaps one of the most common issues in the Tennessee Court of Workers' Compensation Claims is medical causation: does an employee's injury satisfy the definition of "injury" in the statute? A pair of recent cases offers a little guidance.

GREEN V. KELLOGG COMPANIES

A Supreme Court Special Workers' Compensation Panel examined the various ways of conveying an expert medical opinion on causation. James Green alleged a shoulder injury while working for Kellogg. He chose Dr. Lloyd Robinson from a panel, who diagnosed a non-work-related shoulder strain. Dr. Robinson testified at his deposition that "the pain that he had was contributed less than 50 percent by his employment [...] given the severity of the arthritis he had." Green then started treating on his own. Dr. Lee McCallum diagnosed a "repetitive motion injury" that "seems to be work-related."

Ultimately, Dr. Kenneth Weiss performed a shoulder replacement. Dr. Weiss wrote in a letter that Green's diagnosis "is compatible with his duties that he was performing," and the injuries were "consistent with or at least exacerbated by his repetitive pushing, pulling and lifting the arm while at work." Green later saw Dr. Samuel Chung for an independent medical evaluation. Green filed Dr. Chung's C -32 and attached report. It was unsigned. Kellogg didn't object to use of the C-32, so it never deposed Dr. Chung. Likewise, Drs. McCallum and Weiss were never deposed.
The trial court accepted Dr. Robinson's opinion. Green appealed, but the three-judge Supreme Court Workers' Compensation Panel affirmed.

Senior Judge William Acree wrote that Dr. Robinson testified in his deposition that "[h]e implicitly considered arthritis to be a preexisting condition that arose gradually prior to November 2014. The severity of the arthritis led Dr. Robinson to conclude that Employee's work contributed less than 50% to his need for medical treatment." Judge Acree continued, "Employee had the opportunity to explore the bases of that opinion during cross examination and to question the doctor about an aggravation, but he did not do so."

The Panel further reasoned that the records of Drs. McCallum, Weiss, and Chung offered "no foundation or explanation for each doctor's opinions or observations relating to causation." Further, Drs. McCallum and Dr. Weiss didn't use the statutory language in Tennessee Code Annotated section 50-6-102(14)(B), "which requires employees to show, by a preponderance of the evidence, that their employment contributed more than fifty percent (50%) in causing an injury, considering all causes." As for Dr. Chung, while the form itself used the statutory language, it wasn't signed.

Judge Acree concluded, "Someone marked a box which stated the Employer contributed more than fifty percent (50%) in causing Employee's injury. However, we find that the statement in the unsigned and unexplained form, which was an addendum to the report, does not have the degree of trustworthiness or reliability necessary to rebut the presumption of correctness of the treating physician's opinion as to causation."

JOINER V. UNITED PARCEL SERVICE

This was another case with dueling expert causation opinions. Roger Joiner alleged injury to multiple body parts from lifting a mailbag at work. To prove causation, he sought an IME from Dr. Steven Neely, who testified in person at the compensation hearing. The trial court accepted his opinion that Joiner suffered a compensable aggravation of a preexisting condition.

The Appeals Board reversed with regard to the alleged cervical spine injury. Judge David Hensley's opinion for the three-judge Board observed that Dr. Neely testified that it was his "feeling" that the injuries "stem from the workplace injury," but he was "truly not sure how one would be able to clearly separate which injuries were from the time span when the history placed them both as having been secondary to the injury." Dr. Neely further testified he was "just unable to tell whether one level was injured or two levels were injured in a person that has never had any symptoms in their neck prior to the injury." He stated that, before the work incident, Joiner "had neck trouble but it was subclinical and it did not produce pain." The Board held this insufficient to prove causation: "[T]he trial court did not identify, nor do we find in the record, evidence expressing any measure of the contribution of the work incident to Employee's C5-6 condition[.] . . . Dr. Neely did not testify, either directly or indirectly, that Employee's work incident 'contributed more than fifty percent (50%)' in causing an injury at the C5-6 level of Employee's spine."

A FEW LESSONS

Now don't forget, the opinions below are those of a staff attorney, not the Court of Workers' Compensation Claims or the Appeals Board. Please read the cases to draw your conclusions, too. That said, with regard to C-32s, a few obvious takeaways are: Physicians, sign them; Employee attorneys, file/introduce signed C-32s; Employer attorneys, review an employee's C-32 closely for statutory defects, such as the lack of a signature. (And it couldn't hurt for lawyers on both sides to review all of the procedures for the use of C-32s in section 50-6-235(c)(1)).

For lawyers, *Green* demonstrates the importance of depositions. The courts compared Dr. Robinson's opinion, expressed as sworn, detailed testimony, versus the other doctors' medical records alone. Those records didn't, in the courts' opinions, offer sufficient reasoning for how the doctors reached their conclusions. On that note, physicians, be sure to justify your opinion in the records. Finally, as for the wording of the physicians' opinions, the Panel in *Green* didn't expressly state that "seems to be work-related" won't cut it. But the Panel did offer a "script" of sorts, specifically, that the statute "requires employees to show, by a preponderance of the evidence, that their employment contributed more than fifty percent (50%) in causing an injury, considering all causes."

Must a medical expert follow a "script"? The Appeals Board answered this in the negative in *Panzarella v. Amazon.com*, explaining, "[A] physician may render an opinion that meets the legal standard espoused in section 50-6-102(14) without couching the opinion in a rigid recitation of the statutory definition," and, "What is necessary is sufficient proof from which the trial court can conclude that the statutory requirements of an injury as defined in section 50-6-102(14) are satisfied." Panzarella affords some flexibility when determining medical causation. However, from *Joiner*, it appears the safe route for convincing a judge that an opinion on causation is correct is to use as close a recitation to the statute as possible and to adequately support it with sound reasoning.

The Next Step Program

Brian Holmes, MA

The inability to return to work because of an on-the-job injury can be devastating. The certainty offered by a career to provide a home, dinner on the table, and support one's self and family can be turned upside down when an injury prevents an employee from returning to work. An uncertain future combined with the stresses of a physical ailment can lead to decreased feelings of self-worth and depression.

On December 3, 2018, the Tennessee Bureau of Workers' Compensation launched the Next Step Program to provide hope that the future will hold a better tomorrow. The program aims to guide injured workers to resources that help define their skills and abilities and match them with jobs and training opportunities so they can get back to work.

"These workers are at a loss, and we didn't want them to feel like there's nothing they can go toward," said Abbie Hudgens, BWC Administrator. "This program will give them a wonderful opportunity to identify a job they've maybe always wanted to do or discover skills they never knew they had."

The Next Step program allows applicants to find a new career path without having to go through a traditional education program. It shows workers how to utilize the expertise available at the American Job Centers in Tennessee. The centers have trained staff who can assess job skills and help permanently injured persons find suitable employment by partnering with local employers. The program can also guide individuals interested in obtaining new skills to resources that can possibly cover the full cost of training.

"Applicants can use the Next Step program as a gateway to a long list of resources," said Robert Davies, director of the Subsequent Injury and Vocational Recovery Fund. "American Job Centers can connect injured workers with federal government financial assistance programs and state scholarship programs such as Tennessee Reconnect."

The Next Step Scholarship is another option for workers injured on the job on or after July 1, 2018. Financial assistance of up to $5,000 per year is available for workers to acquire new job skills at a Tennessee College of Applied Technology, community college, or public university.

To qualify for the Next Step Scholarship, the injured worker must have a compensable claim and receive permanent disability benefits for not returning to work or for returning to work at a lower wage. The BWC must receive the worker's scholarship application within 90 days of the person's final permanent disability payment that includes compensation for not returning to work.

Upon filing an application for the Next Step Program, an applicant will be contacted by a program representative. The representative will assist the injured worker with identifying the nearest American Job Center and accessing their resources to maximize the number of available opportunities.

The BWC has created a committee of experts in labor, return to work, vocational assessment and workers' compensation to recommend scholarship allotments. Applicants with additional educational assistance opportunities are ideal Next Step scholarship recipients because they will help our $500,000 scholarship limit go further by combining monies from multiple sources. Upon award of a scholarship, the Next Step representative will coordinate between the injured worker, the educational institution, and governmental financial assistance programs to facilitate the payment of the Next Step scholarship to the educational institution. The injured worker will receive an award letter based upon the expected costs of attending the educational institution. An award letter to the institution will allow the student to enroll without worrying about payment.

"The extensive assistance provided during each phase of the Next Step Program is expected to facilitate many successful returns to the workforce," said Davies.

Applications for the program can be completed and submitted immediately after a settlement approval. Brochures are now available at all BWC offices. Workers can receive additional information about the Next Step program by contacting the BWC at 800-332-2667.

Self-Reported Marijuana Use Is Associated with Increased Use of Prescription Opioids Following Traumatic Musculoskeletal Injury.*

Bhashyam AR, Heng M, Harris MB, Vrahas MS, Weaver MJ

J Bone Joint Surg Am. 2018 Dec 19;100(24):2095-2102.
doi: 10.2106/JBJS.17.01400.

BACKGROUND: Cannabinoids are among the psychoactive substances considered as alternatives to opioids for the alleviation of acute pain. We examined whether self-reported marijuana use was associated with decreased use of prescription opioids following traumatic musculoskeletal injury.

METHODS: Our analysis included 500 patients with a musculoskeletal injury who completed a survey about their marijuana use and were categorized as (1) never a user, (2) a prior user (but not during recovery), or (3) a user during recovery. Patients who used marijuana during recovery indicated whether marijuana helped their pain or reduced opioid use. Prescription opioid use was measured as (1) persistent opioid use, (2) total prescribed opioids, and (3) duration of opioid use. Persistent use was defined as the receipt of at least 1 opioid prescription within 90 days of injury and at least 1 additional prescription between 90 and 180 days. Total prescribed opioids were calculated as the total morphine milligram equivalents (MME) prescribed after injury. Duration of use was the interval between the first and last opioid prescription dates.

RESULTS: We found that 39.8% of patients reported never having used marijuana, 46.4% reported prior use but not during recovery, and 13.8% reported using marijuana during recovery. The estimated rate of persistent opioid use ranged from 17.6% to 25.9% and was not associated with marijuana use during recovery. Marijuana use during recovery was associated with increases in both total prescribed opioids (regression coefficient = 343 MME; 95% confidence interval [CI] = 87 to 600 MME; p = 0.029) and duration of use (coefficient = 12.5 days; 95% CI = 3.4 to 21.5 days; p = 0.027) compared with no previous use (never users). Among patients who reported that marijuana decreased their opioid use, marijuana use during recovery was associated with increased total prescribed opioids (p = 0.008) and duration of opioid use (p = 0.013) compared with never users.

CONCLUSIONS: Our data indicate that self-reported marijuana use during injury recovery was associated with an increased amount and duration of opioid use. This is in contrast to many patients' perception that the use of marijuana reduces their pain and therefore the amount of opioids used.

Has Self-Reported Marijuana Use Changed in Patients Undergoing Total Joint Arthoplasty after the Legalization of Marijuana?*

Jennings JM, Williams MA, Levy DL, Johnson RM, Eschen CI, Dennis, DA

Clin Orthop Relat Res. 2019 Jan;477(1):95-100.
doi: 10.1097/CORR.0000000000000339.

BACKGROUND: Marijuana use has become more accessible since its recent legalization in several states. However, its use in a total joint arthroplasty population to our knowledge has not been reported, and the implications of its use in this setting remain unclear.

QUESTIONS/PURPOSES: We report (1) the self-reported use of marijuana in patients undergoing total joint arthroplasty both before and after its legalization; and (2) clinical and demographic factors associated with marijuana use in patients undergoing total joint arthroplasty.

METHODS: One thousand records of patients undergoing primary total joint arthroplasty (500 consecutive before and 500 consecutive after the legalization of the commercial sale of marijuana in Colorado) were included for analysis. Preoperative medical history and physicals were retrospectively reviewed for self-reported and reasons (medicinal versus recreational) for use. Additionally, patient records were used to determine insurance type, age, gender, smoking status, history of substance abuse, preoperative narcotic use, alcohol intake, and the type of arthroplasty performed.

RESULTS: Self-reported use after legalization dramatically increased from 1% (four of 500) to 11% (55 of 500) (odds ratio [OR], 15.3 [95% confidence interval, 5.5-42.6]; p < 0.001) after legalization. For those reporting use after legalization, 46% (25 of 55) of patients reported recreational use, 26% (14 of 55) medicinal use, 27% (15 of 55) did not report a reason for use, and 2% (one of 55) reported both recreational and medicinal use. Factors associated with use included younger age (with a 10-year mean difference between the groups [p < 0.001]), male gender (36 of 59 users [61%] versus 411 of 941 nonusers [44%]; OR, 2.02; p < 0.01), current smokers (22 of 59 users [37%] versus 54 of 941 [6%] nonusers; OR, 0.09; p < 0.01), a history of substance abuse (eight of 59 users [14%] versus 18 of 941 nonusers [2%]; OR, 8.04; p < 0.001), insurance type (Medicaid only, 28 of 59 [48%] users versus 56 of 941 [6%] nonusers; OR, 20.45; p < 0.01), and preoperative narcotic use (eight of 59 users [14%] versus 17 of 941 nonusers [2%]; OR, 2.4; p < 0.001). We did not find differences with regard to alcohol use, amount of alcohol consumption, or insurance types other than Medicaid.

CONCLUSIONS: These results suggest the legalization of marijuana has led to either more users or more patients who are willing to report its use given the lack of legal ramifications. Despite these findings, the evidence to date precludes the use of marijuana postoperatively in patients undergoing total joint arthroplasty. Further investigation, ideally in a prospective randomized manner, should focus on opioid consumption, nausea, sleep patterns, and outcomes in patients using marijuana who are undergoing total joint arthroplasty before recommendations can be made for its use.

LEVEL OF EVIDENCE: Level III, therapeutic study.

Cannabis-based Medicines for Chronic Neuropathic Pain in Adults.*

Mücke M, Phillips T, Radbruch L, Petzke F, Häuser W.

Cochrane Database Syst Rev. 2018 Mar 7;3:CD012182. doi: 10.1002/14651858.CD012182.pub2

BACKGROUND: This review is one of a series on drugs used to treat chronic neuropathic pain. Estimates of the population prevalence of chronic pain with neuropathic components range between 6% and 10%. Current pharmacological treatment options for neuropathic pain afford substantial benefit for only a few people, often with adverse effects that outweigh the benefits. There is a need to explore other treatment options, with different mechanisms of action for treatment of conditions with chronic neuropathic pain. Cannabis has been used for millennia to reduce pain. Herbal cannabis is currently strongly promoted by some patients and their advocates to treat any type of chronic pain.

OBJECTIVES: To assess the efficacy, tolerability, and safety of cannabis-based medicines (herbal, plant-derived, synthetic) compared to placebo or conventional drugs for conditions with chronic neuropathic pain in adults.

SEARCH METHODS: In November 2017 we searched CENTRAL, MEDLINE, Embase, and two trials registries for published and ongoing trials, and examined the reference lists of reviewed articles.

SELECTION CRITERIA: We selected randomised, double-blind controlled trials of medical cannabis, plant-derived and synthetic cannabis-based medicines against placebo or any other active treatment of conditions with chronic neuropathic pain in adults, with a treatment duration of at least two weeks and at least 10 participants per treatment arm.

DATA COLLECTION AND ANALYSIS: Three review authors independently extracted data of study characteristics and outcomes of efficacy, tolerability and safety, examined issues of study quality, and assessed risk of bias. We resolved discrepancies by discussion. For efficacy, we calculated the number needed to treat for an additional beneficial outcome (NNTB) for pain relief of 30% and 50% or greater, patient's global impression to be much or very much improved, dropout rates due to lack of efficacy, and the standardised mean differences for pain intensity, sleep problems, health-related quality of life (HRQoL), and psychological distress. For tolerability, we calculated number needed to treat for an additional harmful outcome (NNTH) for withdrawal due to adverse events and specific adverse events, nervous system disorders and psychiatric disorders. For safety, we calculated NNTH for serious adverse events. Meta-analysis was undertaken using a random-effects model. We assessed the quality of evidence using GRADE and created a 'Summary of findings' table.

MAIN RESULTS: We included 16 studies with 1750 participants. The studies were 2 to 26 weeks long and compared an oromucosal spray with a plant-derived combination of tetrahydrocannabinol (THC) and cannabidiol (CBD) (10 studies), a synthetic cannabinoid mimicking THC (nabilone) (two studies), inhaled herbal cannabis (two studies) and plant-derived THC (dronabinol) (two studies) against placebo (15 studies) and an analgesic (dihydrocodeine) (one study). We used the Cochrane 'Risk of bias' tool to assess study quality. We defined studies with zero to two unclear or high risks of bias judgements to be high-quality studies, with three to five unclear or high risks of bias to be moderate-quality studies, and with six to eight unclear or high risks of bias to be low-quality studies. Study quality was low in two studies, moderate in 12 studies and high in two studies. Nine studies were at high risk of bias for study size. We rated the quality of the evidence according to GRADE as very low to moderate.

PRIMARY OUTCOMES: Cannabis-based medicines may increase the number of people achieving 50% or greater pain relief compared with placebo (21% versus 17%; risk difference (RD) 0.05 (95% confidence interval (CI) 0.00 to 0.09); NNTB 20 (95% CI 11 to 100); 1001 participants, eight studies, low-quality evidence). We rated the evidence for improvement in Patient Global Impression of Change (PGIC) with cannabis to be of very low quality (26% versus 21%;RD 0.09 (95% CI 0.01 to 0.17); NNTB 11 (95% CI 6 to 100); 1092 participants, six studies). More participants withdrew from the studies due to adverse events with cannabis-based medicines (10% of participants) than with placebo (5% of participants) (RD 0.04 (95% CI 0.02 to 0.07); NNTH 25 (95% CI 16 to 50); 1848 participants, 13 studies, moderate-quality evidence). We did not have enough evidence to determine if cannabis-based medicines increase the frequency of serious adverse events compared with placebo (RD 0.01 (95% CI -0.01 to 0.03); 1876 participants, 13 studies, low-quality evidence).

SECONDARY OUTCOMES: Cannabis-based medicines probably increase the number of people achieving pain relief of 30% or greater compared with placebo (39% versus 33%; RD 0.09 (95% CI 0.03 to 0.15); NNTB 11 (95% CI 7 to 33); 1586 participants, 10 studies, moderate quality evidence). Cannabis-based medicines may increase nervous system adverse events compared with placebo (61% versus 29%; RD 0.38 (95% CI 0.18 to 0.58); NNTH 3 (95% CI 2 to 6); 1304 participants, nine studies, low-quality evidence). Psychiatric disorders occurred in 17% of participants using cannabis-based medicines and in 5% using placebo (RD 0.10 (95% CI 0.06 to 0.15); NNTH 10 (95% CI 7 to 16); 1314 participants, nine studies, low-quality evidence).

SUBGROUP ANALYSIS: We found no information about long-term risks in the studies analyzed. We are uncertain whether herbal cannabis reduces mean pain intensity (very low-quality evidence). Herbal cannabis and placebo did not differ in tolerability (very low-quality evidence).

AUTHORS' CONCLUSIONS: The potential benefits of cannabis-based medicine (herbal cannabis, plant-derived or synthetic THC, THC/CBD oromucosal spray) in chronic neuropathic pain might be outweighed by their potential harms. The quality of evidence for pain relief outcomes reflects the exclusion of participants with a history of substance abuse and other significant comorbidities from the studies, together with their small sample size.

*Published verbatim from PubMed.gov, in the public domain.

COMMENTARY FROM THE BUREAU MEDICAL DIRECTORS

Proponents of legalization of Medical Marijuana point out some reduction in opioid use in states legalizing medical use of marijuana. The article by Jennings, et al (CORR 2019) points out that for the acute pain of a total hip replacement surgery in Colorado, self-report of marijuana use was eight times more common in those with a substance abuse history and 2.4 times more

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CAUSATION: A PROBLEM FOR THE AUTHORIZED TREATING PHYSIAN

Selected by James B. Talmage, MD

One of the duties of the authorized treating physician is to issue a medical opinion on causation at the initial visit (or early in treatment when information permits an accurate and complete diagnosis) for potential workers' compensation cases.

Physicians in general do not like to do causation analysis, as all medical schools and most residencies do not train physicians in causation analysis (some Occupational Medicine residencies do train residents in this). In addition, the scientific studies on the frequency of diseases in populations are primarily published in journals for ergonomists and epidemiologists, and the physicians who treat injured workers do not typically subscribe to or read these journals. Causation by workplace exposure is a factor to consider when writing future work activity guidelines, but typically it has no effect on treatment recommendations, so to physicians this is not a very important issue.

The definitions section of Tennessee Code Annotated section 50-6-102 states:

(14) "Injury" and "personal injury" mean an injury by accident, a mental injury, occupational disease including diseases of the heart, lung and hypertension, or cumulative trauma conditions including hearing loss, carpal tunnel syndrome or any other repetitive motion conditions, arising primarily out of and in the course and scope of employment, that causes death, disablement or the need for medical treatment of the employee; provided, that:

(A) An injury is "accidental" only if the injury is caused by a specific incident, or set of incidents, arising primarily out of and in the course and scope of employment, and is identifiable by time and place of occurrence, and shall not include the aggravation of a preexisting disease, condition or ailment unless it can be shown to a reasonable degree of medical certainty that the aggravation arose primarily out of and in the course and scope of employment;

(B) An injury "arises primarily out of and in the course and scope of employment" only if it has been shown by a preponderance of the evidence that the employment contributed more than fifty percent (50%) in causing the injury, considering all causes;

(C) An injury causes death, disablement or the need for medical treatment only if it has been shown to a reasonable degree of medical certainty that it contributed more than fifty percent (50%) in causing the death, disablement or need for medical treatment, considering all causes;

(D) "Shown to a reasonable degree of medical certainty" means that, in the opinion of the physician, it is more likely than not considering all causes, as opposed to speculation or possibility;

(E) The opinion of the treating physician, selected by the employee from the employer's designated panel of physicians pursuant to § 50-6-204(a)(3), shall be presumed correct on the issue of causation but this presumption shall be rebuttable by a preponderance of the evidence;

Doctors need to recognize that the ultimate decision on causation and thus compensability is a legal, and not exclusively a medical decision. The phrase "arising primarily out of and in the course and scope of employment" has been and continues to be litigated, and case law precedent is well known to lawyers and judges, but not to physicians. This phrase may be controlling in a particular case. The physician is not likely to have all the relevant information to make this judgement. It is important that the authorized treating physician only comment on the medical analysis.

Medical analysis of causation should start by classifying cases into one of three categories:

1. A case with major violence that frequently causes human injury. For example, a construction worker falls 30 feet off a roof and sustains a broken femur. Causation is rarely contested, and a one sentence description of injury to orient the reader in the medical records is sufficient.

2. A case with no apparent injury incident with the question of whether cumulative trauma or cumulative exposure resulted in the health outcome in question (e.g. occupational asthma or carpal tunnel syndrome). Detailed causation analysis will be required.

3. A case with an identified incident (articulated with date, time, place, and activity) that does not typically result in significant human harm, but the incident is alleged to be "the cause." Detailed causation analysis will be required.

In scenarios #2 and #3 the way to avoid "speculation or possibility" [TCA section 50-6-102-14 (D) above] is to reference epidemiologic literature that establishes a relative risk of > 2.0 for the occupation or exposure. If a group of individuals in a prospective cohort of the general population is surveyed, and 100 cases of the disease or health outcome have occurred, and then a demographically matched population of the same number of people but with the workplace exposure of interest yields 200 cases, then the relative risk is 200 ÷ 100 = 2.0. This means 100 cases represent the baseline rate of the disease or health outcome in the general population and the additional 100 cases occurred in those with the workplace exposure. Examining an individual case does not permit a physician to determine if that case was caused by the workplace exposure or was due to the baseline rate of idiopathic cases, as cases of carpal tunnel syndrome, osteoarthritis, rotator cuff pathology have no distinctive imaging or pathological features to permit causation differentiation.

Should a different study find a different potential workplace exposure resulted in 140 cases, while 100 cases were expected as the baseline rate of the condition in the general population, then the Relative Risk for this exposure is 1.4. This means the chance of any one individual's case being caused by the workplace exposure is 40÷ 140 = 0.29, or 29% of the cases are due to the exposure of interest. Thus, it would be more likely than not that employment did not contribute "50% or more" to the outcome or disease of interest.

Two additional medical considerations apply.

First, the authorized treating hysician needs to verify that the individual had an exposure comparable to the Inclusion Criteria in the published studies on this exposure and this health outcome. For example, the most frequent definition of Highly Repetitive in ergonomic studies is a cycle time of 30 seconds or less for an 8 hour workday, meaning the individual performs 1,000 repetitions in the eight- hour workday. If an individual performs many fewer daily repetitions of a work task than this,

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NON-SPECIFIC CHRONIC BACK PAIN

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are found unreliable pursuant to the text on page 563, then there is no way for the MIR physician to modify the rating from its default, or Grade C value. Thus, for injuries that utilize this diagnosis on or after July 1, 2014, the MIR Physician should simply assign the default rating of 2%.

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APPLY TO BE AN MIR PHYSICIAN

RELEVANT ABSTRACTS

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common in those who took opioids before surgery. The article by Bhashyam, et al. (JBJS 2018) points out that for the acute pain of musculoskeletal injury, marijuana use did not appear to decrease opioid use for pain, but rather seemed to increase opioid use. The Review by the Non-Profit Cochrane Collaboration of marijuana for chronic nerve injury pain found based on low-to moderate-quality evidence (no high quality studies) that for an outcome of > 50% pain relief, 17% of placebo treated patients had pain relief as contrasted with 21% of marijuana treated patients {NNTB = Number Needed to Benefit = 20, meaning for every 20 patients treated, 1 benefits, and 19 logically should have that treatment discontinued}. For > 30% pain relief, 33% of placebo treated patients had this limited pain relief as contrasted with 39% of marijuana treated patients {NNTB = 11}. Those treated with marijuana were more likely to experience central nervous system side effects {NNTH = Number Needed to Harm = 3, meaning one of every 3 marijuana treated patients has this type side effect}. In follow up 5% of the placebo treated patients developed a mental illness, as contrasted with 17% of the marijuana treated patients {NNTH= 10, meaning treating 10 patients results in one developing a mental illness}.

The Food and Drug Administration already has approved prescription Marinol® (dronabinol, or "THC", the main psychoactive cannabinoid in the marijuana plant) and Syndros® (liquid dronabinol), and in 2018 approved Epidiolex® (cannabidiol). None of these prescription medications have FDA indications for acute or chronic pain, but their availability in the local drug store means physicians, or midlevel providers, with DEA credentials for controlled substance prescribing can legally prescribe these medications "off label" for injured workers. Physicians, Employers, and Insurers need to communicate and develop policies for these medications. Although currently none of these are "Recommended" or "Y" drugs in the Tennessee BWC adopted drug formulary, prescriptions for these medications may appear in Utilization Review.

CAUSATION AND THE ATP

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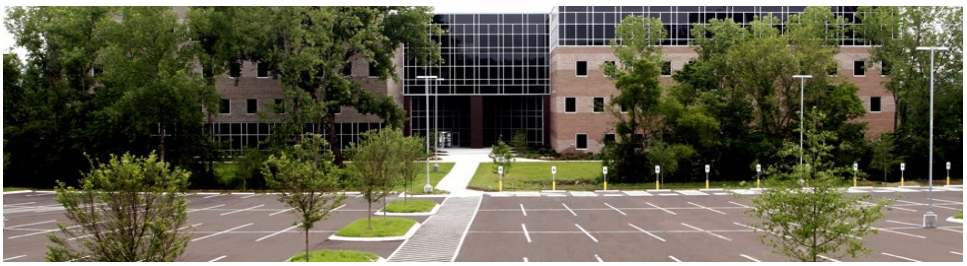
this may not be consistent with published studies on highly repetitive work and a health outcome. Second, the Authorized Treating Physician needs to determine whether the individual has a co-morbidity, or diagnosable illness that renders him/her unusually susceptible to the health outcome in question. For example, if the individual has severe osteoporosis and sustains a vertebral fracture lifting a 25-pound object, the co-morbid osteoporosis may medically explain the fracture. The physician needs to document this, and leave the conclusion to the lawyers, and judges. Since Tennessee does not typically apportion, and since Tennessee employers "take the employee as he/she is," this may be legally determined to be work compensable. Thus, the authorized treating physician needs to objectively establish the correct diagnosis and then document a scientifically supportable conclusion on medical causation.

SUBMISSION GUIDELINES

AdMIRable Review accepts electronic submissions for medicolegal articles related to Tennessee Workers' Compensation. Manuscripts prepared in accordance with the American Psychological Association (APA) guidelines are preferred and must not exceed 20 typewritten, double-spaced pages. Tables, charts, notes, and references should be on separate pages. A double-spaced summary of approximately 100 words as well as a biographical paragraph describing the author's affiliation, research interest, and recent publications is appreciated. Submission of a manuscript implies permission and commitment to publish in *AdMIRable Review*. Authors submitting manuscripts to *AdMIRable Review* should not simultaneously submit them to another public-administration journal. Submissions and inquiries should be directed to *AdMIRable Review*, Editorial Staff, at Jay.Blaisdell@tn.gov .



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